Engineering and Operations Workgroup Study Plans

Study #1d: Thermalito Complex Temperature Model Development

November 16, 2001

Goals

- Develop appropriate Thermalito Complex temperature model to simulate diversion, pumpback, and release temperature
- Integrate into the overall modeling scheme
- Perform benchmark simulations

Task 1. Define desired outputs from model

- Includes:
  - Thermalito Afterbay release to Feather River temperature
  - Pumpback temperature
  - Agricultural diversion temperature

Task 2. Review existing models

- None known

Task 3. Review existing data

- Types of data
  - Physical characteristics
  - Operational data (inflows, diversions, release, temperatures, etc.)
  - Climatic data (temperature, solar radiation, wind, etc.)

Task 4. Review modeling tools

- Due to complexity of system will use and empirical approach
- May use commercial statistical analysis software package such as SPLUS

Task 5. Select appropriate model or modeling tool

- Due to complexity of system will use and empirical approach
- Potential Dependant Variables
  - Release to Feather River temperature
  - Ag diversion temperature
  - Pumpback temperature
- Potential Independent Variables
  - Oroville release temp
  - Climatic condition
  - Flow rates

Task 6. Collect field data for development, calibration, and verification

- Collect additional field data as required to meet needs

Task 7. Model Development, Calibration, and Verification

- Define system to be modeled and schematic to be used
- Develop physical system definition in model
- Develop time-series input data (hydrologic, operational)
- Calibrate model
- Verify completed model

Task 8 – Integrate into modeling scheme

- Use definitions from Study Plan 1, Tasks 1 and 5
- Finalize transfer utilities and process

Task 9. Perform benchmark simulations

- Get boundary conditions from central modeling database
- Perform the actual simulations
- Use utility programs to load data into central modeling database

Products

- Thermalito Complex temperature model
- Benchmark Thermalito Complex temperature simulation results